



U.S. Department of Energy
Idaho Operations Office

Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project

August 2006

Idaho Cleanup Project

Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project

August 2006

**Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office**

ABSTRACT

An Engineering Evaluation/Cost Analysis (EE/CA) has been prepared for public comment and evaluates alternatives to perform general decommissioning activities at the Idaho National Laboratory (INL) under the Idaho Cleanup Project (ICP). The evaluation assists the U.S. Department of Energy Idaho Operations Office (DOE Idaho) in identifying the most effective means to decommission excess buildings and structures whose missions have been completed. The scope of the EE/CA is intended to encompass miscellaneous buildings and structures, as well as decommissioning preparatory activities for the more substantial and significant facilities that will be subsequently addressed in future non-time critical removal actions (NTCRAs). The EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition. The regulatory process to accomplish this decommissioning is to perform a NTCRA. The approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative. Three alternatives are under consideration for the general decommissioning activities to be performed under the ICP: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring. Followed by Future Decommissioning. The recommended alternative is Alternative 2.

EXECUTIVE SUMMARY

This Engineering Evaluation/Cost Analysis (EE/CA) has been prepared for public comment and evaluates approaches to perform general decommissioning activities at the Idaho National Laboratory (INL) under the Idaho Cleanup Project (ICP). The evaluation assists the U.S. Department of Energy Idaho Operations Office (DOE Idaho) in identifying the most effective means to decommission excess buildings and structures whose missions have been completed. The scope of the EE/CA is intended to encompass miscellaneous buildings and structures, as well as decommissioning preparatory activities for the more substantial and significant facilities that will be subsequently addressed in future non-time critical removal actions (NTCRAs). These more substantial or significant facilities are TAN-607 Hot Shop, TRA-642 Engineering Test Reactor Vessel, TRA-603 Material Testing Reactor Vessel, PER-620 Power Burst Facility Vessel, CPP-601/640 Fuel Process Building/Headend Processing Plant, and CPP-603A Wet Fuel Storage Facility. This EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition. A listing of the buildings and structures planned for decommissioning by the ICP and included in the evaluation is discussed in Section 2.1.8 of the EE/CA. The regulatory process to accomplish this decommissioning is to perform a NTCRA. The approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative. An Administrative Record has been established to record information used to support the EE/CA and provide documentation of decisions and the progress of the removal action.

Although the general decommissioning of buildings and structures by the ICP is not specifically addressed in previous Records of Decision (RODs) at INL, this removal action is consistent with the remedial action objectives (RAOs) of previous RODs and supports the overall cleanup objectives established through the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). Completion of the removal action would place the identified buildings and structures in a condition protective of human health and the environment. The potential contaminants of concern (COCs) that may be encountered during the decommissioning include radionuclides, asbestos, heavy metals, and organic chemicals. Completed comprehensive RODs where ICP decommissioning facilities will occur are available for Test Area North, Reactor Technologies Complex, Idaho Nuclear Technology and Engineering Center, Central Facilities Area, and the Power Burst Facility. The comprehensive ROD for the Radioactive Waste Management Complex is pending. The relevant completed comprehensive Waste Area Group (WAG) RODs are

- *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682, Rev. 0
- *Final Record of Decision Test Reactor Area Operable Unit 2-13*, DOE/ID-10586, and *Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13*, DOE-ID-10744, Rev. 0
- *Final Record of Decision for the Idaho Nuclear Technology and Engineering Center , Operable Unit 3-13*, DOE/ID-10660, Rev. 0
- *Final Comprehensive Record of Decision for Central Facilities Area, Operable Unit 4-13*, DOE/ID-10719, Rev. 2
- *Record of Decision for Power Burst Facility and Auxiliary Reactor Area , Operable Unit 5-12*, DOE/ID-10700.

Development of this EE/CA has been performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as amended by the “Superfund Amendments and Reauthorization Act of 1986” (Public Law 99-499), and in accordance with the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300). Preparation of this EE/CA is consistent with the joint U.S. Department of Energy (DOE) and Environmental Protection Agency (EPA) *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act* (DOE and EPA 1995), which establishes the CERCLA NTCRA process as an approach for decommissioning. The removal action alternatives presented are compared against the criteria of effectiveness, implementability, and cost.

Three alternatives are under consideration for the general decommissioning activities to be performed under the ICP: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring Followed by Future Decommissioning. Alternative 1 (No Action) assumes all short-term and long-term maintenance of the facilities is terminated and the facilities are locked to prevent entry. Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents) consists of decontamination and demolition of the facilities and associated waste disposal. Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) includes a period of facility maintenance and monitoring followed by deactivation, decontamination, and demolition.

Present-worth cost estimates for the three alternatives are shown in Table ES-1. The costs are based on present-day (2006) dollars. Consistent with guidance established by the Environmental Protection Agency and the U.S. Office of Management and Budget, present-worth analysis is included as a basis for comparing costs of cleanup alternatives under the CERCLA program (OMB 1992). Details regarding the assumptions for cost estimates are included in Section 5.3.

Table ES-1. Summary of present worth cost estimates for the three alternatives.

Alternative	Present-Worth Cost
Alternative 1 – No Action	No cost
Alternative 2 – Removal and Disposal of Buildings, Structures, and Building Contents	\$41,193,000
Alternative 3 – Continued Surveillance and Monitoring Followed by Future Decommissioning	\$143,959,000

Alternative 1 (No Action) would not eliminate, reduce, or control risks to human health and the environment. DOE Idaho is required by federal orders and state and federal laws to protect workers and the public from unacceptable exposures, and the INL currently has administrative and physical controls in place to prevent unacceptable exposures to ionizing radiation and other chemical hazards from contaminated materials. DOE Idaho cannot implement a no action alternative (e.g., no controls) because it would put workers at risk and would not meet the requirements of federal orders and state and federal laws. Therefore, the No Action alternative cannot be considered a viable alternative. Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) would merely result in a delay for the start of decommissioning and would require expenditures for the continued maintenance and monitoring over the interim.

The recommended removal action alternative is Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents). When the decommissioning involves management and/or generation

of wastes subject to regulation under the Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA), these wastes would be addressed pursuant to requirements of those regulations. The scope of Alternative 2 is intended to encompass remaining miscellaneous decommissioning actions under the ICP. The scope would further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that will be subsequently addressed in future NTCRAs. This EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition and activities already identified under existing Action Memoranda or remedial actions pursuant to the Federal Facility Agreement and Consent Order. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos and radioactively contaminated asbestos waste, and polychlorinated biphenyl (PCB) -contaminated waste.

Wastes generated through implementation of Alternative 2 would be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the Waste Acceptance Criteria (WAC) of those facilities. For contaminated wastes generated during the decommissioning, the Idaho CERCLA Disposal Facility (ICDF) would be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of building and structures would include removal of abovegrade structures. Belowgrade structures would be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they would optionally be left in place, backfilled, and brought to grade. Backfill would consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs would be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE Idaho as a new site under the Federal Facility Agreement and Consent Order, with concurrence by the Idaho Department of Environmental Quality (DEQ) and EPA.

This EE/CA will become part of the INL Administrative Record. It will be made available for public comment. The INL Administrative Record is on the Internet at <http://ar.inel.gov/> and is available to the public at the following locations:

Albertsons Library
Boise State University
1910 University Drive
Boise, ID 83725
(208) 426-1625

INL Technical Library
DOE Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415
(208) 526-1185

CONTENTS

ABSTRACT.....	iii
EXECUTIVE SUMMARY	v
ACRONYMS.....	xiii
1. INTRODUCTION.....	1
1.1 Purpose and Scope.....	2
2. SITE CHARACTERIZATION	3
2.1 Site Description and Background.....	3
2.1.1 Idaho National Laboratory Site and Idaho Cleanup Project.....	3
2.1.2 Test Area North.....	5
2.1.3 Reactor Technology Complex.....	5
2.1.4 Idaho Nuclear Technology and Engineering Center	5
2.1.5 Central Facilities Area.....	6
2.1.6 Power Burst Facility/Critical Infrastructure Test Range Complex	6
2.1.7 Radioactive Waste Management Complex	6
2.1.8 Buildings and Structures Proposed for General Decommissioning	6
2.2 Previous Closure/Cleanup Activities at the INL Site	18
2.2.1 Comprehensive Environmental Response, Compensation, and Liability Act Activities at the INL Site	18
2.2.2 Voluntary Consent Order Activities.....	18
2.3 Source, Nature, and Extent of Contamination.....	18
2.4 Risk Evaluation and Site Conditions Justifying a Removal Action	19
3. IDENTIFICATION OF REMOVAL OBJECTIVES AND SCOPE.....	20
3.1 Removal Action Objectives.....	21
4. IDENTIFICATION OF REMOVAL ACTION ALTERNATIVES	21
4.1 Alternative 1—No Action	22
4.2 Alternative 2—Removal and Disposal of Buildings, Structures, and Building Contents.....	22
4.3 Alternative 3—Continued Surveillance and Monitoring , Followed by Future Decommissioning	22

5.	ALTERNATIVE ANALYSIS.....	23
5.1	Effectiveness of the Alternatives.....	23
5.1.1	Protectiveness.....	23
5.1.2	Ability to Achieve Removal Action Objectives.....	23
5.2	Implementability of the Alternatives.....	24
5.2.1	Technical and Administrative Feasibility	24
5.2.2	Availability of Equipment, Personnel, and Services	24
5.3	Cost of the Alternatives	24
6.	RECOMMENDED REMOVAL ACTION ALTERNATIVE	25
6.1	Compliance with Environmental Regulations, Including Those That Are Applicable or Relevant and Appropriate Requirements	26
6.2	Cultural Resources.....	27
6.3	Compliance with Disposal Facility Waste Acceptance Criteria.....	27
6.4	Achieving Removal Action Goals.....	31
7.	REFERENCES	31

FIGURES

1.	Map of the Idaho National Laboratory Site showing the location of major facilities	4
2.	Area map of TAN-TSF with small facilities in yellow and major facilities in red	12
3.	Area map of Reactor Technology Complex with small facilities in yellow and major facilities in red	13
4.	Area map of Idaho Nuclear Technology and Engineering Center with small facilities in yellow and major facilities in red	14
5.	Area map of Radioactive Waste Management Complex with small facilities in yellow	15
6.	Area map of Power Burst Facility with major facilities in red.....	16
7.	Area map of Test Area North – CTF/LOFT with small facilities in yellow	17

TABLES

1.	Buildings and structures proposed for general decommissioning	7
2.	Present worth cost estimates for the three alternatives	25
3.	Summary of applicable or relevant and appropriate requirements for the general decommissioning non-time critical removal action.....	28

ACRONYMS

ACHP	Advisory Council on Historic Preservation
ARAR	applicable or relevant and appropriate requirement
ATR	Advanced Test Reactor
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	<i>Code of Federal Regulations</i>
CITRC	Critical Infrastructure Test Range Complex
COC	contaminant of concern
CRMP	Cultural Resources Management Plan
DEQ	[Idaho] Department of Environmental Quality
DOE	Department of Energy
DOE Idaho	Department of Energy Idaho Operations Office
EE/CA	engineering evaluation/cost analysis
EPA	Environmental Protection Agency
ETR	Engineering Test Reactor
FFA/CO	Federal Facility Agreement and Consent Order
HEPA	high-efficiency particulate air (filter)
HWMA	Hazardous Waste Management Act
ICDF	Idaho CERCLA Disposal Facility
ICP	Idaho Cleanup Project
IDAPA	Idaho Administrative Procedures Act
INEEL	Idaho National Engineering and Environmental Laboratory
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MTR	Materials Testing Reactor

NHPA	National Historic Preservation Act
NTCRA	non-time critical removal action
OU	operable unit
PBF	Power Burst Facility
PCB	polychlorinated biphenyl
RAO	remedial action objective/removal action objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RTC	Reactor Technology Complex
RWMC	Radioactive Waste Management Complex
S&M	surveillance and monitoring
SHPO	State Historic Preservation Officer
SMC	Specific Manufacturing Capability
SPERT	Special Power Excursion Reactor Test
SRPA	Snake River Plain Aquifer
TAN	Test Area North
TBC	to be considered
TRA	Test Reactor Area
USC	<i>United States Code</i>
VCO	Voluntary Consent Order
WAC	Waste Acceptance Criteria
WAG	waste area group

Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project

1. INTRODUCTION

This Engineering Evaluation/Cost Analysis (EE/CA) has been prepared in accordance with Section 300.415(b)(4)(i) of the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300) and assists the U.S. Department of Energy Idaho Operations Office (DOE Idaho) in identifying the most effective alternative for performing the general decommissioning of excess Idaho National Laboratory (INL) Site facilities, whose mission is now completed. The process to accomplish this decommissioning and to determine how the work will be conducted is to perform a non-time critical removal action (NTCRA). It is intended to satisfy environmental review requirements while providing a framework for selecting the decommissioning end states and satisfying Administrative Record requirements for documentation of the removal action. This EE/CA identifies the objectives of the removal action and analyzes the effectiveness, implementability, and estimated cost of the proposed action to satisfy these objectives. Following the issuance of this EE/CA for public comment, and consideration of comments received during the public review period, an Action Memorandum documenting the selected alternative will be issued to the Administrative Record by DOE Idaho with concurrence from the Idaho Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA).

This action is consistent with the joint U.S. Department of Energy (DOE) and EPA *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (DOE and EPA 1995), which establishes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) NTCRA process as an approach for decommissioning. The policy states in part

Although the full range of CERCLA response actions may be applicable to decommissioning activities, non-time critical removal actions should be used for decommissioning, consistent with this Policy. The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This often will eliminate the need for the more thorough analysis of alternatives required for remedial actions. Non-time critical removal action requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented. Statutory time and dollar limits on removal actions do not apply to removal actions conducted by DOE, which increases the scope of projects that may be addressed by DOE removal action. Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions. For these reasons, DOE may exercise removal action authority to conduct decommissioning whenever such action is authorized by CERCLA, the NCP, and Executive Order 12580.

Performance of this removal action will place the facilities in a configuration that is protective of human health and the environment. Without decommissioning of these buildings and structures, a potential threat of release of hazardous substances exists, and, without action, adverse threats to human health and the environment eventually could occur. As the lead agency, DOE has determined that a removal action is an appropriate means to accomplish the final end state and achieve environmental review requirements. Both the DEQ and the EPA concur that a NTCRA is warranted to place these excess facilities in a configuration that is protective of human health and the environment.

1.1 Purpose and Scope

The scope of the EE/CA is intended to encompass demolition of miscellaneous buildings and structures, as well as decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that will be subsequently addressed in future NTCRAs. These more substantial or significant facilities are TAN-607 Hot Shop, TRA-642 Engineering Test Reactor Vessel, TRA-603 Material Testing Reactor Vessel, PER-620 Power Burst Facility Vessel, CPP-601/640 Fuel Process Building/Headend Processing Plant, and CPP-603A Wet Fuel Storage Facility. This EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition and activities already identified under existing Action Memoranda or remedial actions pursuant to the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991). A listing of facilities subject to the scope of this evaluation is included in Section 2.1.8.

Some buildings or structures slated for decommissioning may be found to be unsuitable for inclusion within the NTCRA or may find unforeseen future uses prior to performing the demolition. If this occurs and eliminating the facility from the list identified in Section 2.1.8 is appropriate, concurrence from DEQ and EPA would first be obtained, and a letter would be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is no longer appropriate for inclusion under the scope of the NTCRA. Furthermore, the Idaho Cleanup Project (ICP) may be asked to decommission other INL buildings and structures with similar characteristics, contaminants, and complexity to those specifically identified in Section 2.1.8. This evaluation intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Section 2.1.8, concurrence from DEQ and EPA would first be obtained, and a letter would be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities specifically identified in this EE/CA and appropriate for inclusion under the scope of the NTCRA.

This NTCRA is intended to obtain input from the public regarding how to best implement decommissioning activities at INL, while simplifying administrative processes for management of wastes generated during decommissioning. The types of wastes typically generated during decommissioning include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The typical classifications of these wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos and radioactively contaminated asbestos waste, and polychlorinated biphenyl (PCB) -contaminated waste. Wastes generated through implementation of this NTCRA would be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the Waste Acceptance Criteria (WAC) of those facilities.

For contaminated wastes generated during the decommissioning, the Idaho CERCLA Disposal Facility (ICDF) would be the preferred disposal location for wastes meeting the ICDF WAC. For uncontaminated solid wastes, the Test Area North (TAN) Industrial Waste Landfill would be used for disposal of such wastes generated near TAN, and the Central Facilities Area (CFA) Industrial Waste Landfill would be utilized for those wastes generated elsewhere at the INL. When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA), these wastes would be addressed pursuant to requirements of those regulations. If evidence of contamination to surrounding soils is encountered, those soils exceeding the remedial action objectives (RAOs) would be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE Idaho as a new site under the *Federal Facility Agreement and Consent Order*

(DOE-ID 1991), with concurrence by the DEQ and EPA. If a site is included under the FFA/CO, the site would be subject to further investigation and a subsequent response action as necessary under the FFA/CO.

2. SITE CHARACTERIZATION

This section provides summary background information and a description of the areas at INL Site where decommissioning activities would occur. This section identifies previous and ongoing closure and cleanup activities, including a description of the buildings and structures that are addressed in this EE/CA and additional information relevant to the scope of this EE/CA. This section also provides a summary of the radiological and nonradiological contaminants of concern (COCs) likely to be encountered while conducting the decommissioning.

2.1 Site Description and Background

2.1.1 Idaho National Laboratory Site and Idaho Cleanup Project

The INL Site, managed by DOE, is located 51 km (32 mi) west of Idaho Falls, Idaho (Figure 1). The INL Site occupies 2,305 km² (890 mi²) of the northeastern portion of the Eastern Snake River Plain. In 1949, the U.S. Atomic Energy Commission established the INL Site, which was called the National Reactor Testing Station at that time. Its purpose was to conduct nuclear energy research and related activities. It was redesignated the Idaho National Engineering Laboratory in 1974 and then the Idaho National Engineering and Environmental Laboratory (INEEL) in 1997. In 2005, to better focus the laboratory's missions, DOE established the ICP to bring the environmental management mission to completion and re-designated the site as the INL to better reflect the laboratory's new research directions.

DOE Idaho controls all land within the INL Site. Public access is restricted to public highways, DOE Idaho sponsored tours, special-use permits, and the Experimental Breeder Reactor I National Historic Landmark. In addition, DOE Idaho supports the Shoshone-Bannock tribal members' need for access to areas on the INL Site for cultural and religious purposes.

The INL Site is located primarily in Butte County; however, it also occupies portions of Bingham, Bonneville, Clark, and Jefferson counties. The 2000 census indicated the following populations (in parentheses) for cities in the region: Idaho Falls (50,730), Pocatello (51,466), Blackfoot (10,419), Arco (1,026), and Atomic City (25). Surface water flows on the INL Site consist mainly of three streams draining intermountain valleys to the north and northwest of the INL Site: (1) the Big Lost River, (2) the Little Lost River, and (3) Birch Creek. All of the channels terminate on the INL Site. Flows from Birch Creek and the Little Lost River seldom reach the INL Site because of irrigation withdrawals upstream. The Big Lost River and Birch Creek may flow onto the INL Site before the irrigation season or during high-water years, but the terminal reaches are usually dry. In those few wetter years when the Big Lost River carries water to the end of its channel, the water sinks into the ground.

The physical characteristics, climate, flora and fauna, demography, and cultural resources of the INL area are further described in the following documents:

- *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682 (DOE-ID 1999a)

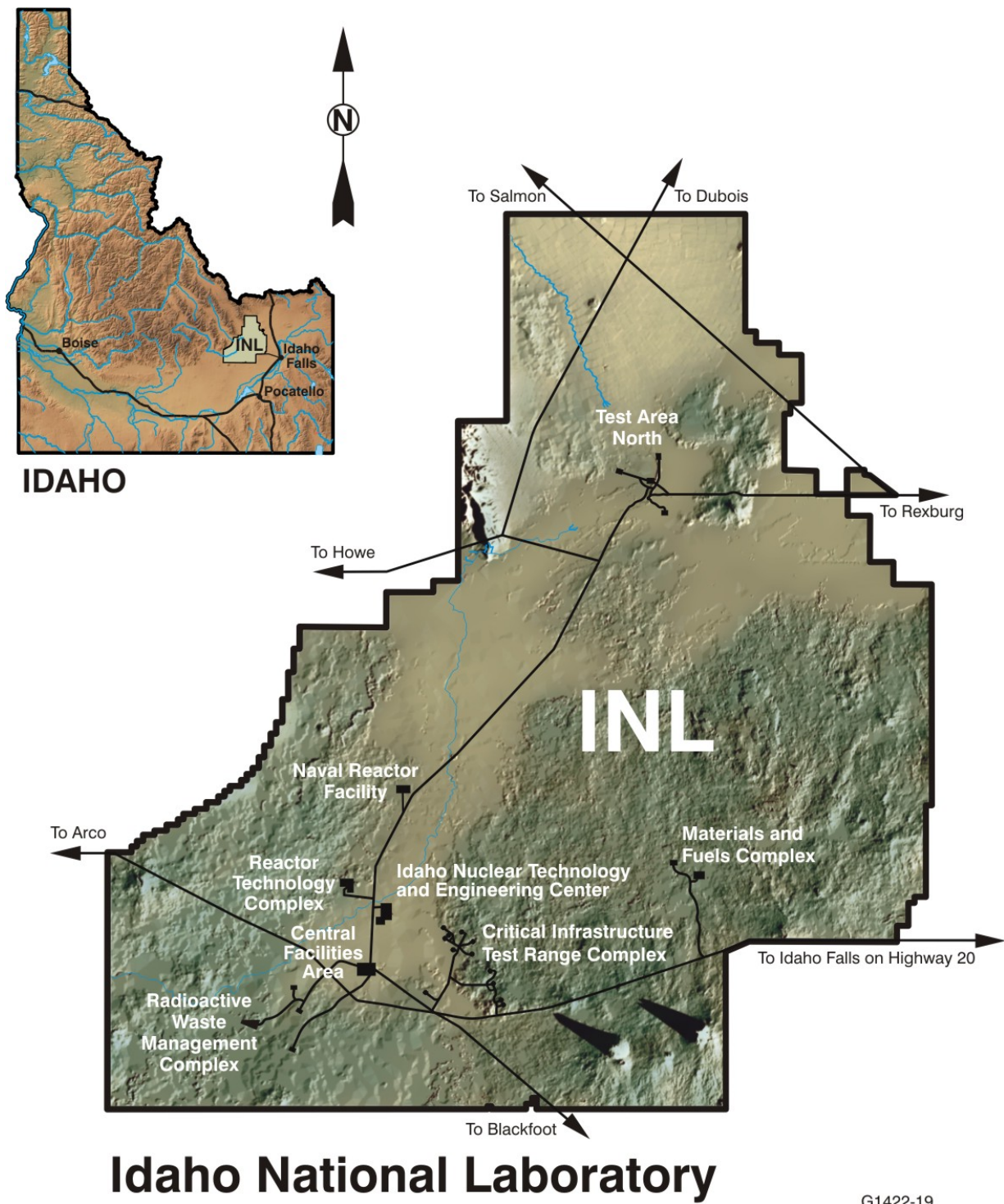


Figure 1. Map of the Idaho National Laboratory Site showing the location of major facilities.

- *Final Record of Decision Test Reactor Area Operable Unit 2-13, DOE/ID-10586 (DOE-ID 1997) and Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13, DOE-ID-10744 (DOE-ID 2000a)*
- *Final Record of Decision for the Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, DOE/ID-10660 (DOE-ID 1999b)*
- *Final Comprehensive Record of Decision for Central Facilities Area, Operable Unit 4-13, DOE/ID-10719 (DOE-ID 2000b)*
- *Record of Decision for Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12, DOE/ID-10700 (DOE-ID 2000c).*

2.1.2 Test Area North

Located in the northern portion of the INL Site, the original mission of TAN was to support the U.S. Air Force in its efforts to create a nuclear-powered airplane, beginning in 1954. Although the Air Force project was terminated in 1961, the project and others after it resulted in the development of four subareas at TAN: the Initial Engine Test Facility (decommissioned in 2001), the Water Reactor Research Test Facility (decommissioned in 2004), the Technical Support Facility (currently undergoing decommissioning), and the Contained Test Facility. The U.S. Army selected the TAN Contained Test Facility as the site for their Specific Manufacturing Capability (SMC) program, which continues to produce armor for combat vehicles.

2.1.3 Reactor Technology Complex

The Reactor Technology Complex (RTC), formerly known as the Test Reactor Area (TRA), has served to house high-neutron-flux nuclear reactors and to test the effect of irradiation upon materials, fuels, and equipment. It is located in the south-central portion of the INL Site. The complex was established in the early 1950s with the development of the Materials Testing Reactor (MTR) (which is located in the TRA-603 building). Two other major reactors followed: the Engineering Test Reactor (ETR) (which is located in the TRA-642 building) and the Advanced Test Reactor (ATR) (which is located in TRA-670). Removal of the fuel rods from MTR and ETR began soon after reactor operations ceased, in 1970 and 1981, respectively. Only the ATR is currently operational.

2.1.4 Idaho Nuclear Technology and Engineering Center

Situated in the south-central portion of the INL Site, the Idaho Nuclear Technology and Engineering Center (INTEC) began receiving, storing, and reprocessing nuclear materials in 1953. Historically, INTEC has been a uranium reprocessing facility for irradiated nuclear fuel from test, defense, and research reactors in the United States and other countries. After fuel dissolution and extraction, high-level liquid waste was stored in stainless-steel underground tanks in the tank farm. The high-level liquid waste was calcined, and the resultant granular solids (calcine) were stored in stainless-steel bins encased in thick concrete vaults. In 1992, DOE announced that the reprocessing component of the INTEC mission would be phased out. This decision led to the phaseout of all related processes at INTEC. Other missions have included research, storage of spent nuclear fuel, and waste management.

2.1.5 Central Facilities Area

Located in the south-central portion of the INL Site, CFA has been used since 1949 to house many of the support services for all of the operations at the INL Site. Functions housed at CFA include laboratories, security operations, fire protection, a medical facility, communication systems, warehouses, a cafeteria, vehicle and equipment pools, and the bus system.

2.1.6 Power Burst Facility/Critical Infrastructure Test Range Complex

The Power Burst Facility (PBF), designated Building PER-620, is located within the Critical Infrastructure Test Range Complex (CITRC). The complex was originally developed in the late 1950s as the Special Power Excursion Reactor Test (SPERT) area, which was comprised of four light-water reactors and a control area. The first reactor, SPERT-I, was decontaminated and decommissioned in the late 1960s and replaced by the PBF reactor in 1970. The Waste Reduction Operations Complex program subsequently took over the empty SPERT-II, -III, and -IV buildings and the PBF Control Area and used them for treatment, storage, and recycling of radioactive, hazardous, mixed, and industrial/commercial waste. Operation of the Waste Reduction Operations Complex officially terminated June 3, 2004, and the area's facilities were turned over to national security programs for new missions.

By the mid-1980s, the PBF reactor had been shut down and placed in standby condition. A NTCRA for Phase 1 decommissioning of the PBF reactor has been implemented (*Action Memorandum for Phase 1 of the Decommissioning of the Power Burst Reactor Building (PER-620)* [DOE-NE-ID 2005]), but end-state decisions and vessel disposition are planned for implementation through a subsequent NTCRA.

2.1.7 Radioactive Waste Management Complex

The Radioactive Waste Management Complex (RWMC) is located in the southwestern corner of the INL Site. The facility encompasses a total of 177 acres and is divided into three separate areas by function: the Subsurface Disposal Area (97 acres), the Transuranic Storage Area (58 acres), and the Administration area (22 acres). The mission of the facility from 1952 to 1970 was to manage disposal of radioactive waste. Since 1970, the mission has been to dispose of low-level waste and to store, treat, and prepare stored transuranic waste for off-Site shipment and disposal (Litus and Shea 2005). Recent construction of the Advanced Mixed Waste Treatment Project expanded the RWMC's waste management operations to include treating and preparing the 62,000 m³ of stored transuranic waste for shipment out of Idaho. An accelerated retrieval project is currently underway in the Subsurface Disposal Area to remove targeted waste. This activity is being performed under a separate NTCRA.

2.1.8 Buildings and Structures Proposed for General Decommissioning

Table 1 lists the buildings and structures currently proposed for general decommissioning under this NTCRA. Figures 2 through 7 are area maps showing small facilities (in yellow) and major facilities (in red). Some of these buildings currently house offices or are utilized for equipment and materials storage. Occupants, equipment, and materials would need to be relocated prior to decommissioning. As discussed in Section 1.1, if new information arises during the decommissioning or the inclusion of additional facilities is deemed appropriate, the list may be modified, with DEQ and EPA concurrence, and notice placed in the Administrative Record.

Table 1. Buildings and structures proposed for general decommissioning.^a

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
CPP-1607	Automatic Foam Fire Prot. Bldg		X
CPP-1619	Haz Chem/Rad Waste Fac.		X
CPP-1634	Technology Dev. Facility		X
CPP-1635	Haz. Chemical Storage Facility		X
CPP-1636	Warehouse		X
CPP-1644	Bulk Chemical Unloading		X
CPP-1646	Anti-C Safety Handling		X
CPP-1649	Instrument Storage & Maintenance Facility		X
CPP-1651	Operations Training Facility		X
CPP-1653	Subcontractor's Warehouse		X
CPP-1656	Warehouse		X
CPP-1662	Remote Insp. Engr. Facility		X
CPP-1666	Engineering Support Office		X
CPP-1677	Change Room		X
CPP-1678	Contractors Lunch Room		X
CPP-1740	Camera Tower		X
CPP-1752	Camera Tower		X
CPP-1755	Cesspool for VES-CFE-6013		X
CPP-1759	Diesel Storage Tank Basin		X
CPP-601	Fuel Processing Building	X	
CPP-603A	Wet Fuel Storage Facility	X	
CPP-609	Cold Waste Facility Office		X
CPP-618	Tank Farm Measure/Control		X
CPP-619	Waste Storage Controlhouse		X
CPP-621	Chemical Storage Pumphouse		X
CPP-622	Tank Farm Instrument House		X
CPP-623	Tank Farm Instrument House		X
CPP-628	Tank Farm Controlhouse		X
CPP-632	Instrument House, Tank Farm Area		X
CPP-634	Waste Station WM-185		X
CPP-635	Waste Stations WM-187-188		X
CPP-636	Waste Stations WM-189/-190		X
CPP-638	Waste Station WM-180		X
CPP-640	Headend Process Plant	X	
CPP-645	Office Building		X
CPP-651	Unirradiated. Fuel Storage Facility		X
CPP-653	Waste Handling Facility		X

Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
CPP-654	Receiving Warehouse/Offices		X
CPP-656	Office Building		X
CPP-660	Chem. & Haz. Material Storage		X
CPP-668	Engineering Support Offices		X
CPP-674	Utilities Replacement Enhancement Project (UREP) Substation #40		X
CPP-687	Coal-Fired Boiler House		X
CPP-688	Coal Plant Unload Bldg		X
CPP-689	Coal Plant Guard House		X
CPP-690	Coal Plant Storage Bldg		X
CPP-696	Coal Plant Offices		X
CPP-698	Morrison Knudsen (MK) Offices/Warehouse		X
CPP-699	Training/Prod. Office Bldg.		X
CPP-712	Bldg. Instrument House		X
CPP-727	Fluorinel Dissolution Process and Fuel Storage hydrogen fluoride (FAST HF) Acid Storage VES-CS-169		X
CPP-737	Condenser Pit/HE-WM-300		X
CPP-738	Cooling Water Pit / HE-WM-301		X
CPP-739	Condenser Pit for HE-WM-302		X
CPP-740	Settling Basin and Dry Well		X
CPP-743	Condenser Pit for HE-WM-387		X
CPP-755	Coal Storage Pad So CPP-687		X
CPP-758	MAH-STA-WQ-415		X
CPP-763	Tank Waste Vault VES-WM-191		X
CPP-764	SFE Hold Tank Vault		X
CPP-775	Fuel Oil Pump Shed, Coal Fired		X
CPP-776	Car Thaw Station, Coal-Fired		X
CPP-778	Elec. Substation, Coal-Fired		X
CPP-787	Stack Exhaust Tapered		X
CPP-788	Boiler Baghouse #1, Coal-Fired		X
CPP-789	Boiler Baghouse #2, Coal-Fired		X
CPP-792	Ash Silo, Coal-Fired		X
CPP-793	Limestone Silo, Coal-Fired		X
CPP-794	Coal Handling Dust Collector		X
CPP-TB-5	Unloading Station		X
CPP-TR-35	Office Trailer		X
PER-620	Reactor Building	X	

Table 1. (continued).

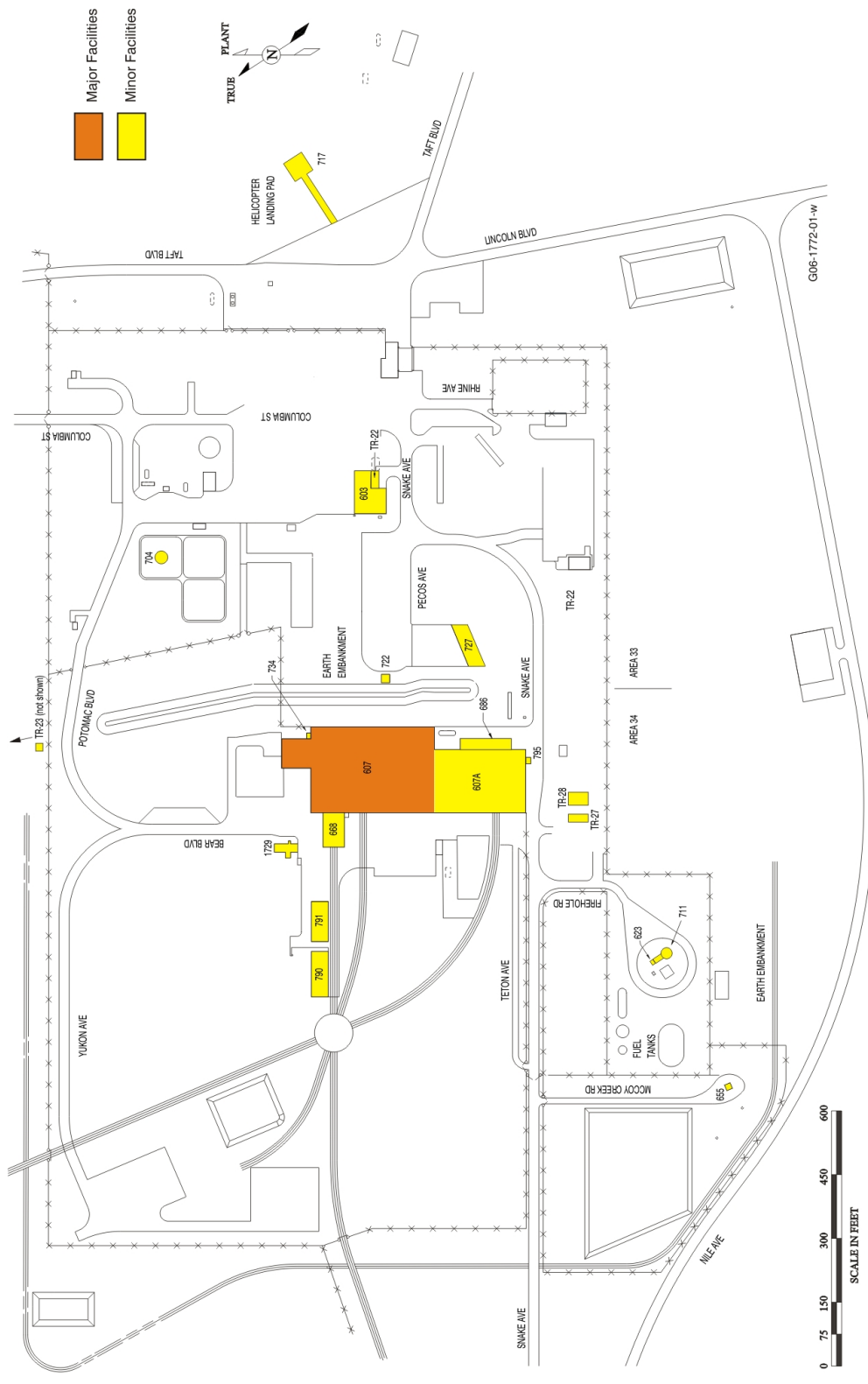
INL Site Bldg. ID	Name	Major Facilities	Small Facilities
TAN-1729	Cask Storage Pad		X
TAN-1731	TAN 607A Substation		X
TAN-1734	Emergency Generator Fuel Tank		X
TAN-1735	Emergency Generator Fuel Tank		X
TAN-1757	V-Tank Consolidation Yurt		X
TAN-603	Service Bldg/Steam Plant		X
TAN-607	Hot Shop/Manufacturing & Assembly	X	
TAN-611	Fuel Pump House		X
TAN-623	Sewage Pump House		X
TAN-655	Liquid Waste Lift Station		X
TAN-668	Heavy Equipment Cleaning		X
TAN-686	Office Trailer		X
TAN-704	Boiler Fuel Tank		X
TAN-711	Sewage Treatment Plant		X
TAN-717	Helicopter Pad		X
TAN-722	1500 kVA Substation		X
TAN-727	Covered Stairs, E. of TAN-607		X
TAN-733	Water Storage Tank		X
TAN-734	Exhaust Stack (TAN 607)		X
TAN-774	Concrete Slab		X
TAN-778	Water Blowdown Tank (Technical Support Facility [TSF])		X
TAN-790	Abnormal Waste Storage Pad		X
TAN-791	Spent Fuel Storage Pad		X
TAN-795	TAN Substation		X
TAN-TR-22	TAN 603 Change House		X
TAN-TR-23	TAN Landfill Trailer		X
TAN-TR-25	Loss of Fluid Test (LOFT) ICP Support Facility I (West)		X
TAN-TR-26	LOFT ICP Support Facility II (East)		X
TAN-TR-27	TSF ICP Support Facility I (West)		X
TAN-TR-28	TSF ICP Support Facility II (East)		X
TAN-TR-29	LOFT Decontamination and Decommissioning (D&D) Craft Trailer #2		X
TRA-603	Material Test Reactor Bldg.	X	
TRA-604	MTR Building Wing A		X
TRA-610	MTR Fan House		X
TRA-626	Maintenance Storage Building		X
TRA-630	Catch Tank Pumphouse		X

Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
TRA-635	Reactor Services Building		X
TRA-642	Engineering Test Reactor Bldg.	X	
TRA-643	ETR Compressor Building		X
TRA-644	ETR Heat Exchanger Bldg		X
TRA-648	ETR Electrical Building		X
TRA-654	ETR Critical Facility		X
TRA-657	MTR Contaminated Storage and Enclosure		X
TRA-661	Reactor Wing South Extension		X
TRA-665	Neutron Chopper 20 Meter House		X
TRA-668	Reactor Wing North Extension		X
TRA-705	ETR Secondary Filter Pit		X
TRA-706	Delay Tanks		X
TRA-709	MTR Air Intake		X
TRA-710	MTR Stack & Monitoring Building		X
TRA-755	ETR Filter Pit		X
TRA-784	Liquid Nitrogen Tank		X
WMF-601	Radcon Field Office		X
WMF-603	Pumphouse		X
WMF-604	Change House & Lunch Room		X
WMF-605	Well House 87		X
WMF-609	Heavy Equip. Storage Shed		X
WMF-611	Operations Support Facility		X
WMF-619	Communication Building		X
WMF-620	Work Control Center, Trailer		X
WMF-621	Work Control Support, Trailer		X
WMF-622	Office Annex, Trailer		X
WMF-628	Type II Storage Module #1		X
WMF-637	Operations Control Building		X
WMF-639	Firewater Pumphouse #2		X
WMF-645	Construction Support Trailer		X
WMF-646	Field Support Trailer		X
WMF-648	Intermediate-Level Transuranic Storage Facility (ILTSF), Trailer		X
WMF-653	Office Annex #2, Trailer		X
WMF-655	Material Handling Facility		X
WMF-656	Maintenance Facility		X
WMF-657	Const Field Support, Trailer		X
WMF-658	RWMC Office		X

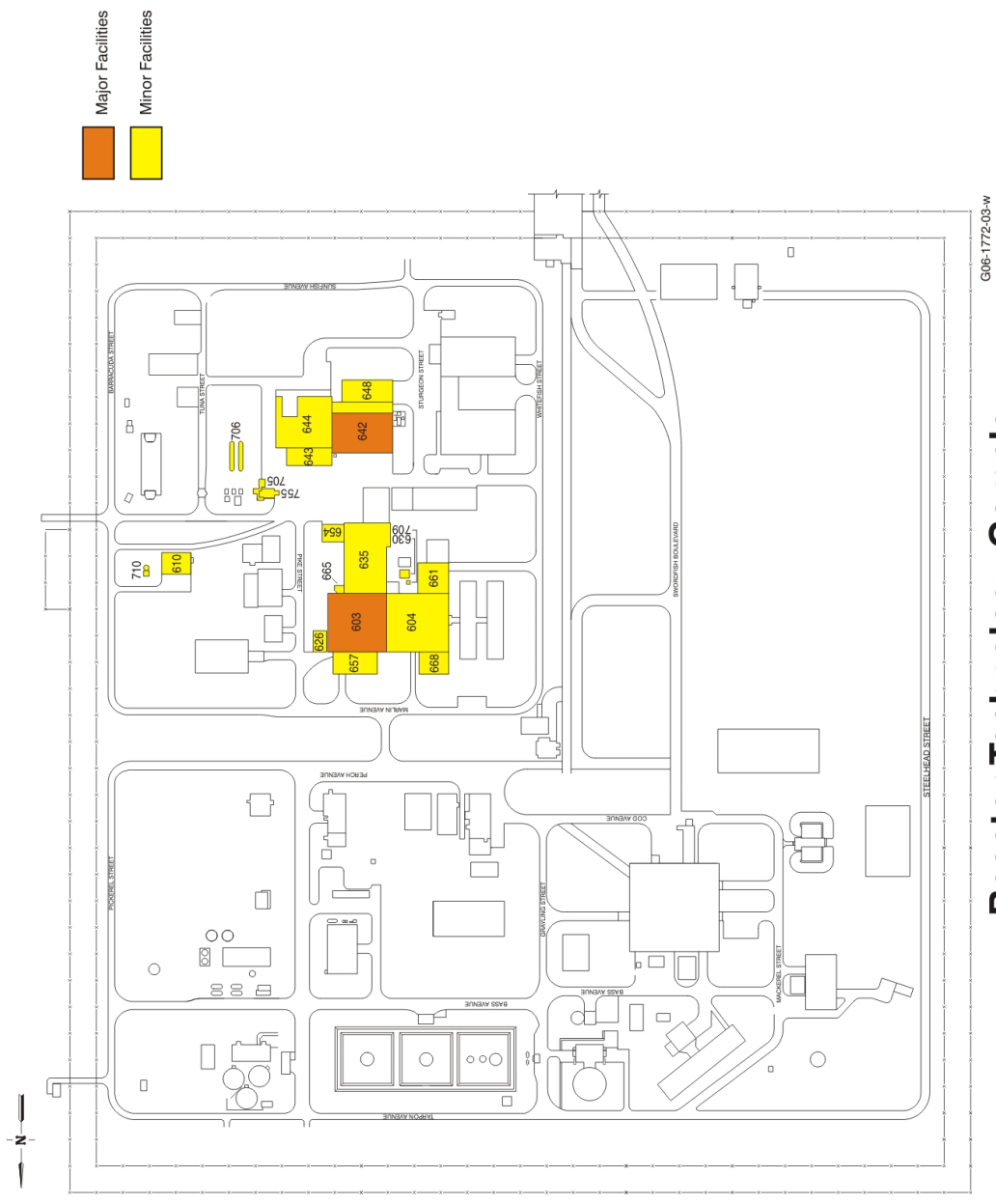
Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
WMF-661	Hazardous Material Storage		X
WMF-671	Weather Enclosure Structure (Glovebox Excavator Method)		X
WMF-680	Building Trailer		X
WMF-681	Building Trailer		X
WMF-682	Security Mobile Office Trailer		X
WMF-708	Sump Pit		X
WMF-709	Water Storage Tank #1		X
WMF-711	ASB-II Foundation, Floor & Airlock		X
WMF-714	ILTSF #1		X
WMF-720	ILTSF #2		X
WMF-727	Fire Water Tank		X
WMF-732	Propane Tank N WMF-637		X
WMF-733	Drum Inspection Station		X
WMF-736	Cold Test Pit		X
WMF-737	Gasoline Tank		X
WMF-738	Propane Tank		X
WMF-739	Well House, Observation 88		X
WMF-740	Well House, Observation 89		X
WMF-741	Well House, Observation 90		X
WMF-750	Temporary Fire Riser Bldg		X
WMFB25-601	Engineering Test Facility		X
<p>a. Highlighted buildings and structures are those subject only to decommissioning preparatory activities under the scope of this NTCRA. See Section 1.1.</p> <p>CPP = Chemical Processing Plant (located at Idaho Nuclear Technology and Engineering Center).</p> <p>PER = Power Excursion Reactor (located at Power Burst Facility).</p> <p>TAN = Test Area North.</p> <p>TRA = Test Reactor Area (located at Reactor Technologies Complex).</p> <p>WMF = Waste Management Facility (located at Radioactive Waste Management Complex).</p>			



TAN-TSF Area Map

Figure 2. Area map of TAN-TSF with small facilities in yellow and major facilities in red.



Reactor Technology Complex

Figure 3. Area map of Reactor Technology Complex with small facilities in yellow and major facilities in red.



Idaho Nuclear Technology and Engineering Center

Figure 4. Area map of Idaho Nuclear Technology and Engineering Center with small facilities in yellow and major facilities in red.

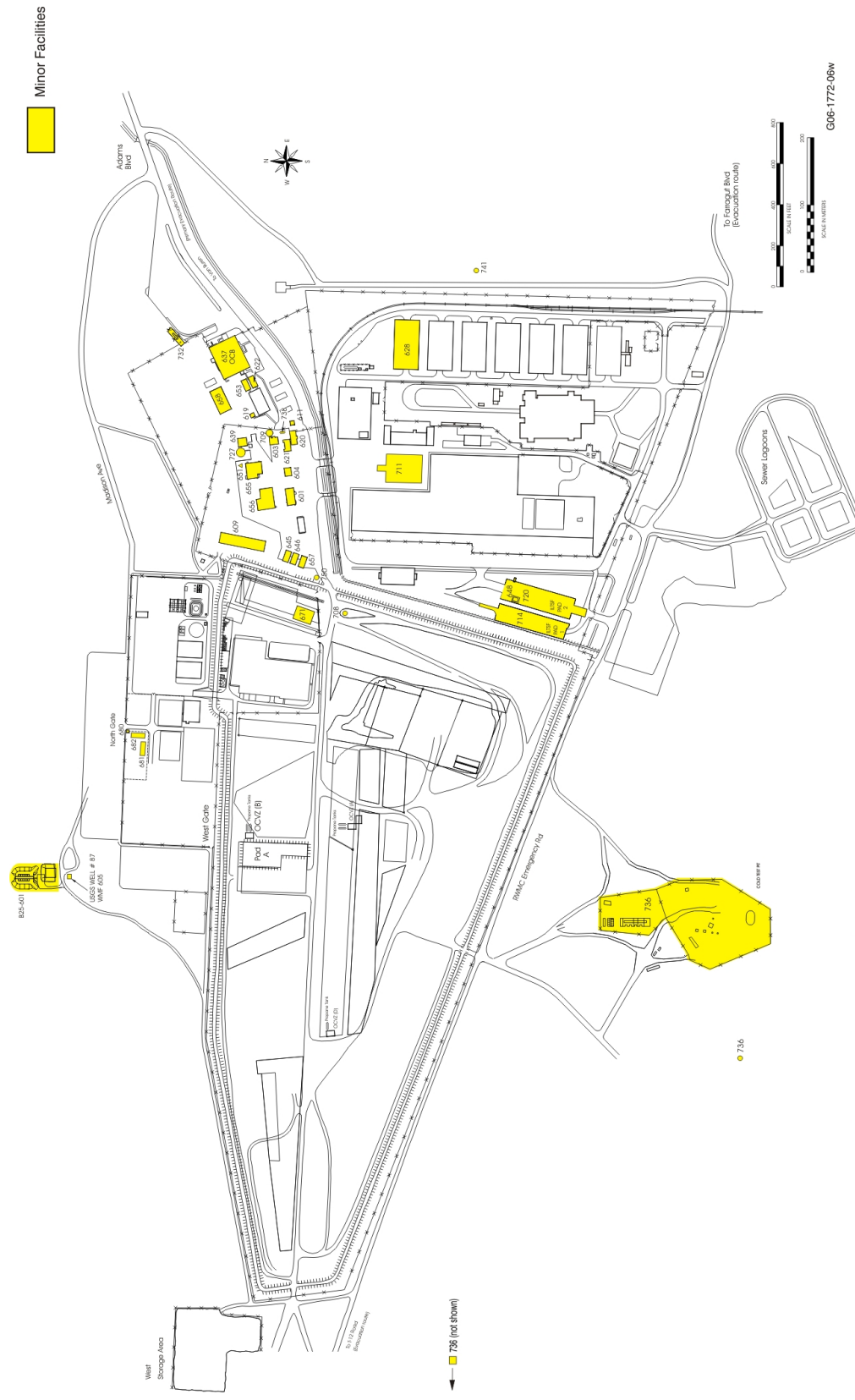
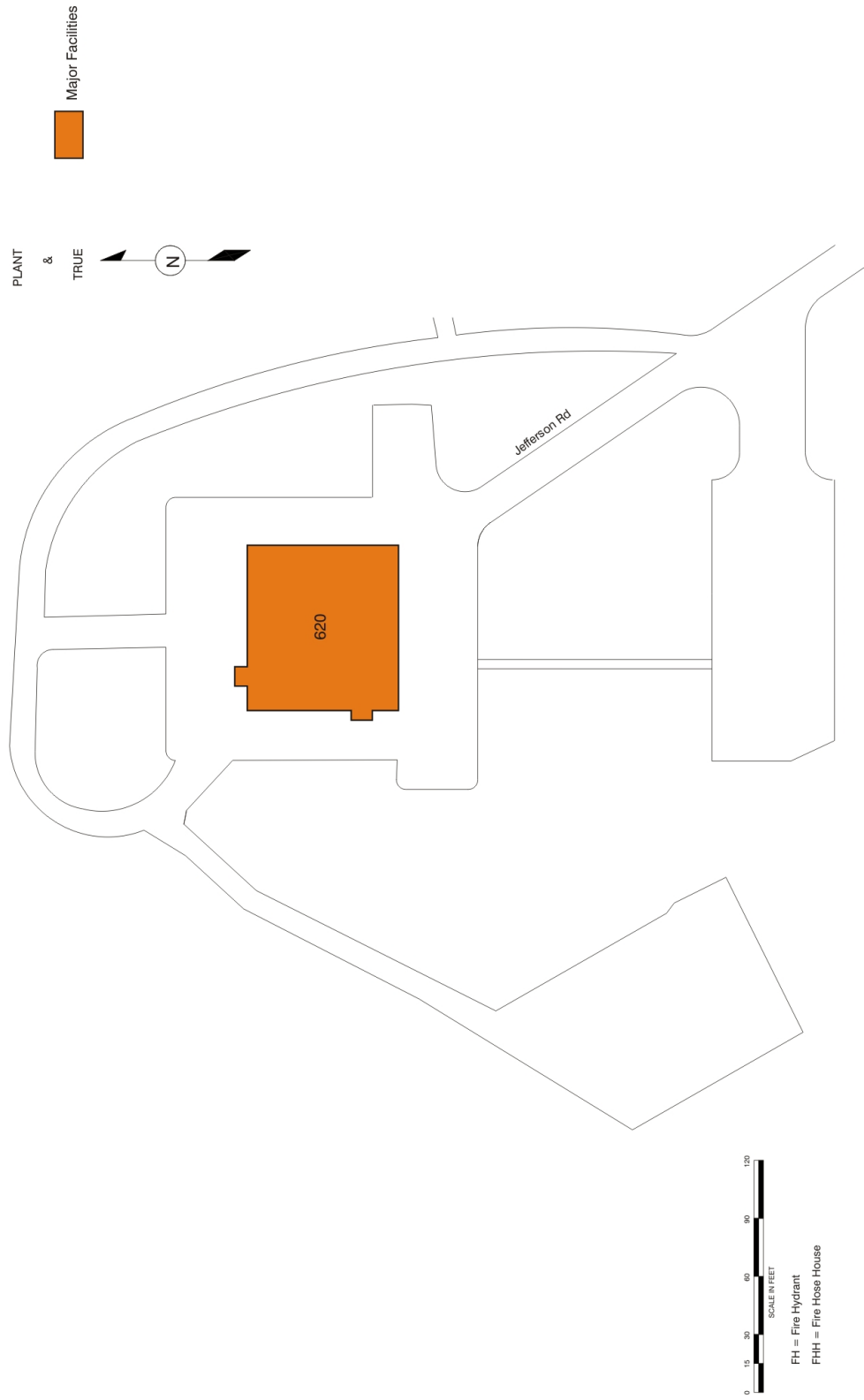


Figure 5. Area map of Radioactive Waste Management Complex with small facilities in yellow.



G06-1772-07

Power Burst Facility

Figure 6. Area map of Power Burst Facility with major facilities in red.

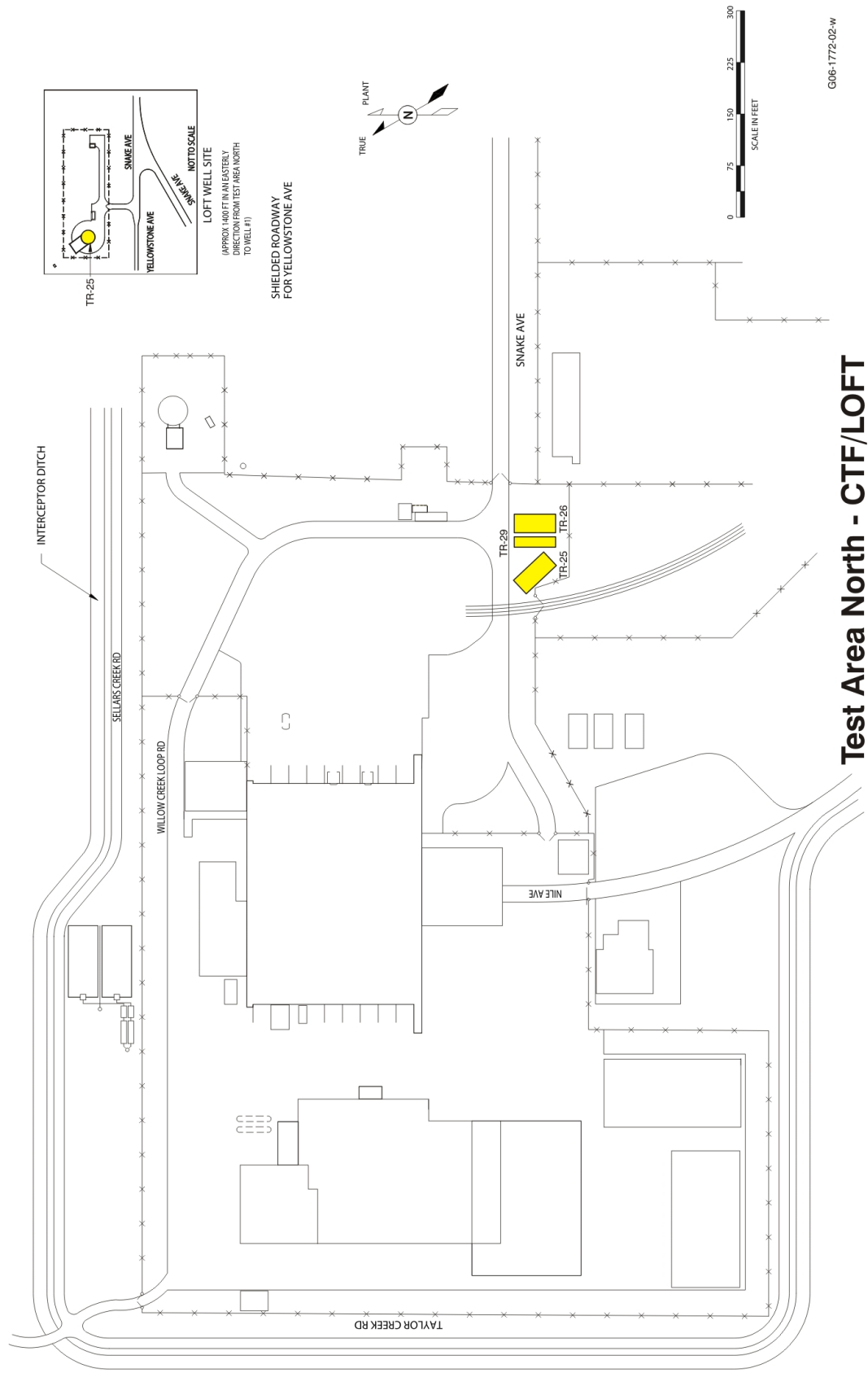


Figure 7. Area map of Test Area North – CTF/LOFT with small facilities in yellow.

2.2 Previous Closure/Cleanup Activities at the INL Site

2.2.1 Comprehensive Environmental Response, Compensation, and Liability Act Activities at the INL Site

The INL Site was added to the EPA's National Priority List of hazardous substances contaminated sites on November 21, 1989 (CERCLIS Identification Number 4890008952). On December 9, 1991, DOE Idaho entered into the FFA/CO (DOE-ID 1991) to address the remediation of contaminated areas. The FFA/CO divided the INL Site into 10 waste area groups (WAGs) corresponding to the major facilities and areas at the Site. Comprehensive Records of Decisions (RODs) have been signed for eight of the 10 WAGs. Remedial actions have been completed at WAGs 2, 4, 5, 6, 8, and 9. Remediation is ongoing at WAGs 3, 7, and 10. RODs are yet to be completed for Operable Units (OUs) 3-14, 7-13/14, and 10-08.

Remedial actions have addressed the cleanup of various contaminated soils sites across the INL Site. Remedial action upon contaminated soils and buried wastes continues at TAN, INTEC, RWMC, and other soil contamination sites within the INL Site but outside of the individual facility boundaries. Long-term monitoring and institutional controls are required for soil contamination sites where residual contamination remains in place. Long-term groundwater monitoring is also conducted pursuant to the FFA/CO, and groundwater remediation activities continue at TAN.

2.2.2 Voluntary Consent Order Activities

A Voluntary Consent Order (VCO) between DOE Idaho and DEQ was signed on June 14, 2000 (DEQ 2000). The VCO addresses legacy hazardous waste compliance issues at the INL Site. Actions required by the VCO have been completed at CFA and PBF. VCO issues related to HWMA/RCRA tank systems at TAN, INTEC, and RTC are yet to be completed.

2.3 Source, Nature, and Extent of Contamination

The source of contamination at each of the buildings or structures addressed by this EE/CA depends on the specific operations conducted at the facility. In general, contamination at these facilities resulted from activities associated with research, testing, and processing of nuclear materials. Various resources were used to help identify the hazardous substances and nature and extent of contamination in the facilities. These resources included historical operations information, process knowledge, radiological survey reports, radiation occurrence reports, facility assessment reports, personnel interviews, facility characterization reports, vulnerability assessments, inspections, walkdowns, and knowledge of construction materials.

To the extent practicable, hazardous substances, including bulk chemicals that are no longer in use, have been, or will be, removed from the facilities during routine surveillance and monitoring (S&M) activities. However, residual contamination may remain on facility surfaces, in piping and ductwork, and in structural materials.

In general, the primary radionuclide COCs are the following:

- Americium-241
- Cesium-137
- Cobalt-60

- Strontium-90
- Plutonium isotopes
- Technetium-99
- Tritium
- Uranium isotopes.

At most of the buildings and structures, the activities of individual isotopes are not fully quantified but will be determined to support waste characterization. Additional radionuclides may be identified beyond the commonly encountered radionuclides listed above. In some cases, the data quality objectives process may be utilized to aid in characterization of the waste prior to disposal.

These buildings and structures also contain nonradioactive hazardous substances, as either contaminants from operations or components of structural materials. These include, but are not limited to, the following:

- Asbestos-containing material
- Cadmium
- Beryllium
- Lead
- PCBs
- Mercury
- Refrigerants
- Lubricants
- Solvents
- Corrosives
- High-efficiency particulate air (HEPA) filter media
- Sodium vapor and mercury vapor lighting.

At most of the buildings and structures, the activities/concentrations of individual hazardous substances are not yet fully identified but will be determined to support waste characterization. In some cases, the data quality objectives process may be utilized to aid in characterization of the waste prior to disposal.

2.4 Risk Evaluation and Site Conditions Justifying a Removal Action

The buildings and structures addressed in this EE/CA may be contaminated with radioactive and/or nonradioactive hazardous substances. The risks associated with the radioactive and/or nonradioactive contaminants have not been quantified in detail. Consequently, the following discussion provides a qualitative discussion of the risks.

The major COCs within the buildings and structures addressed in the EE/CA are radionuclides, which are known carcinogens. While the levels of radioactive contamination in some of the buildings and structures may be significant, many of the facilities may have no contamination at all or have minor

contamination on the surfaces or embedded in the structural material. As is typical with demolition of industrial structures, nonradiological hazardous substances, including asbestos insulation, heavy metals, and PCBs in building materials are also present in the facilities.

Security controls, including administrative and physical access controls, are currently in place for the INL to limit unauthorized entrance. Only authorized personnel are allowed entry into areas where hazards exist. As long as DOE Idaho retains control of these areas, these institutional controls would prevent direct contact with and exposure to the hazardous substances. However, institutional controls will not prevent deterioration of the facilities or eliminate the threat of release of radiological and hazardous substances to the environment. Radiological and hazardous substances could be released directly to the environment via a breach in a pipe, containment wall, roof, or other physical control as the facilities age and deteriorate. Radiological and hazardous substances could also be released to the environment through animal intrusion into contaminated structures and systems. Historically, intrusion and spread of contamination by rodents, insects, birds, and other organisms has been problematic.

As the facilities continue to age, the threat of substantial release of radiological and hazardous substances increases with time, and it becomes more difficult to contain these materials and prevent them from being released to the environment. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. Comprehensive WAG RODs from these areas have demonstrated that historical releases from waste streams associated with these buildings and structures have presented an unacceptable risk to human health and the environment. In some cases, removal of these buildings and structures would accommodate access for remediation of these identified waste sites.

Therefore, the potential exposure to workers and wildlife, the potential threat of future releases, the substantial risks associated with the radiological and hazardous substances at the facilities addressed by this EE/CA, and the risks associated with the waste sites beneath or adjacent to the facilities justify use of CERCLA removal action authority in accordance with Section 300.415(b)(2) of the “National Oil and Hazardous Substances Pollution Contingency Plan.”

3. IDENTIFICATION OF REMOVAL OBJECTIVES AND SCOPE

The potential COCs that may be encountered during the decommissioning consist of radionuclides, asbestos, heavy metals, and organic chemicals. General CERCLA protectiveness standards and RAOs are established in the individual WAG comprehensive RODs at INL. The comprehensive ROD for RWMC is pending. Completed comprehensive RODs where ICP decommissioning facilities will occur are available for TAN, RTC, INTEC, CFA, and the PBF. This section identifies the RAOs and goals for the activities associated with this NTCRA. Although general decommissioning of miscellaneous INL buildings and structures is not specifically addressed in the comprehensive WAG RODs, these RAOs are consistent with those established by the comprehensive WAG RODs. The relevant completed comprehensive WAG RODs are

- *Final Record of Decision for Test Area North Operable Unit 1-10, DOE/ID-10682 (DOE-ID 1999a)*
- *Final Record of Decision Test Reactor Area Operable Unit 2-13, DOE/ID-10586 (DOE-ID 1997) and Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13, DOE-ID-10744 (DOE-ID 2000a)*
- *Final Record of Decision for the Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, DOE/ID-10660 (DOE-ID 1999b)*

- *Final Comprehensive Record of Decision for Central Facilities Area, Operable Unit 4-13, DOE/ID-10719 (DOE-ID 2000b)*
- *Record of Decision for Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12, DOE/ID-10700 (DOE-ID 2000c)*

3.1 Removal Action Objectives

The RAOs for this NTCRA are to perform the decommissioning of miscellaneous ICP buildings and structures consistent with the comprehensive WAGs RAOs to achieve the following:

- Prevent external exposure to COCs that would result in cumulative excess carcinogenic risks from multiple COCs to ensure risks remain less than 1 in 10,000 for a hypothetical resident 100 years in the future
- Prevent external exposure to COCs that would result in a hazard index greater than 1 for a hypothetical resident 100 years in the future
- Prevent future releases to the Snake River Plain Aquifer (SRPA) that would result in migration of contaminants to the aquifer such that Idaho groundwater quality standards may be exceeded and to ensure that cumulative excess carcinogenic risks due to groundwater ingestion from multiple COCs remain less than 1 in 10,000 for a hypothetical resident 100 years in the future
- Prevent unacceptable internal exposure to biota that would result in the lack of maintenance or recovery of healthy local populations/communities of ecological receptors that are or should be present at or near the site.

The removal action goals also are predicated on the current and future land uses established in the comprehensive WAG RODs, which include industrial land use until at least 2095 and the potential for residential land use thereafter. Actions conducted under this NTCRA would be reviewed with DEQ and EPA for continued protectiveness during the Sitewide CERCLA 5-year review process prescribed under the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991).

4. IDENTIFICATION OF REMOVAL ACTION ALTERNATIVES

Three alternatives are under consideration for the general decommissioning activities to be performed under the ICP: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring Followed by Future Decommissioning. Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents) consists of decontamination and demolition of the facilities and associated waste disposal. Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) includes a period of facility maintenance and monitoring to the year 2095, followed by deactivation, decontamination, and demolition.

Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) would merely result in a delay for the start of decommissioning and would require expenditures for the continued surveillance and monitoring over the interim.

4.1 Alternative 1—No Action

Alternative 1 assumes all short-term and long-term maintenance of the facilities is terminated and the facilities are locked to prevent entry. Alternative 1 would not eliminate, reduce, or control risks to human health and the environment. DOE Idaho is required by federal orders and state and federal laws to protect workers and the public from unacceptable exposures. Therefore, the INL currently has administrative and physical controls in place to prevent unacceptable exposures to ionizing radiation and other chemical hazards from contaminated materials. DOE Idaho cannot implement a no action alternative (i.e., no administrative or physical controls) because it would put workers at risk and would not meet the requirements of federal orders and state and federal laws. Therefore, the No Action alternative cannot be considered a viable alternative, and is not considered further.

4.2 Alternative 2—Removal and Disposal of Buildings, Structures, and Building Contents

The scope of Alternative 2 is intended to encompass remaining miscellaneous decommissioning actions under the ICP. The scope would further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that will be subsequently addressed in future NTCRAs. This EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition and activities already identified under existing Action Memoranda or remedial actions pursuant to the FFA/CO. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos and radioactively contaminated asbestos waste, and PCB-contaminated waste.

When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes would be addressed pursuant to requirements of those regulations. Wastes generated through implementation of Alternative 2 would be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For contaminated wastes generated during the decommissioning, the ICDF would be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of buildings and structures would include removal of abovegrade structures. Belowgrade structures would be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they would optionally be left in place, backfilled, and brought to grade. Backfill would consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs would be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE Idaho as a new site under the FFA/CO, with concurrence by the DEQ and EPA. If a site is included under the FFA/CO, the site would be subject to further investigation and a subsequent response action as necessary under the FFA/CO.

4.3 Alternative 3—Continued Surveillance and Monitoring , Followed by Future Decommissioning

Alternative 3 includes a period of facility surveillance and monitoring to the year 2095, followed by deactivation, decontamination, and demolition. The year 2095 is used as the assumption for the period of continued S&M, since the timeframe is established in the comprehensive WAG RODs, which include

industrial land use until at least 2095 and the potential for residential land use thereafter. Alternative 3 would merely result in a delay for the start of decommissioning and would require expenditures for the continued surveillance and monitoring over the interim. The cost analysis only addresses the period of S&M through 2095 and does not include the future costs of the eventual decommissioning itself.

5. ALTERNATIVE ANALYSIS

In accordance with the *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA* (EPA 1993), EE/CAs for NTCRA alternatives will be evaluated with respect to three criteria: (1) effectiveness, (2) implementability, and (3) cost. Public acceptance of the preferred alternative will be considered after the public has had an opportunity to review and comment on the EE/CA.

Effectiveness includes two subcriteria: protectiveness and the ability to meet the RAOs. Protectiveness was evaluated based on (1) protectiveness of the alternative for public health and the community, (2) protectiveness of workers during implementation, (3) protectiveness of the environment, and (4) compliance with applicable or relevant and appropriate requirements (ARARs) and other requirements. Implementability is evaluated based on technical feasibility; availability of equipment, personnel, services, and disposal facilities; and administrative feasibility. Costs are estimated, including capital costs, operations and maintenance costs, and present net worth costs.

The No Action alternative (Alternative 1) is included in this EE/CA for completeness. As discussed in Section 4.1, the No Action alternative cannot be considered a viable alternative and is not considered further. However, the alternative is included for comparative purposes in the cost analysis.

5.1 Effectiveness of the Alternatives

The two subcriteria for evaluating effectiveness are protectiveness and the ability to meet the RAOs.

5.1.1 Protectiveness

Protectiveness is the primary objective of a removal action and is a threshold criteria that must be met to consider an alternative. As previously discussed in Section 2.4, as the facilities continue to age, the threat of substantial release of radiological and hazardous substances increases with time, and confining these materials from the environment becomes more difficult. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. Alternative 2 would permanently mitigate the hazards. Alternative 3 would delay decommissioning to be performed at a later date. Although both Alternative 2 and Alternative 3 would be protective of human health, Alternative 2 is considered the most protective since it would eliminate the hazards and preclude the threat of a release due to aging facilities during the period of continued S&M. In addition, Alternative 2 would reduce exposures to workers, since the delayed decommissioning would allow potential additional worker exposures to occur during the interim period of S&M. Although both Alternative 2 and Alternative 3 are considered to be protective of the environment, Alternative 2 would be the most protective since it would preclude the threat of a release to the environment from facilities continuing to age.

5.1.2 Ability to Achieve Removal Action Objectives

Alternatives 2 and 3 are both considered to achieve the RAOs. Alternative 2 achieves the RAOs by removing and disposing of materials contaminated with hazardous substances. Alternative 3 would prevent unacceptable exposures through administrative and physical controls, followed by future decommissioning to mitigate the hazards.

5.2 Implementability of the Alternatives

Implementability is evaluated based on technical and administrative feasibility and availability of equipment, personnel, services, and disposal facilities.

5.2.1 Technical and Administrative Feasibility

Alternatives 2 and 3 are both technically feasible. The methods for performing these activities can be planned and engineered using existing available knowledge and procedures and have been performed at the INL Site or elsewhere. Existing on-Site disposal facilities are available to receive most of the waste to be generated by the activities. Currently, the ICDF is only scheduled to be operational through 2012. Under Alternative 3, if decommissioning took place after 2012, this facility may not be available. Use of the NTCRA process is an appropriate means to document the work, provide for public involvement, and obtain requisite approvals to perform the work.

5.2.2 Availability of Equipment, Personnel, and Services

Equipment to support both Alternatives 2 and 3 is either available at the INL or commercially available. End-loaders and trackhoes with processor end-effectors are available on-Site as are transport trucks. Cranes capable of heavy lifts are available both on-Site and also are commercially available. Advanced cutting methods are available for cutting contaminated equipment. Trained personnel are available to perform both Alternatives 2 and 3. On-Site or off-Site disposal or recycling services are available for the types of wastes expected to be generated under Alternative 2.

5.3 Cost of the Alternatives

Cost estimates have been prepared for the alternatives evaluated in this EE/CA. The estimates were prepared in accordance with *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA 2000). Costs are calculated for both capital expenditures and future operation and maintenance expenses. In accordance with EPA guidance, the cost for the alternatives over time is calculated as present net worth costs, which are sometimes referred to as net present value, to represent the costs in 2006 dollars.

For Alternative 1, all short-term and long-term maintenance of the facilities is assumed to be terminated, the facilities are locked to prevent entry, and the buildings are left to deteriorate. Therefore, no cost is assumed for Alternative 1. Under Alternative 2, because the management of HWMA/RCRA hazardous wastes is not included in the scope of this NTCRA, disposal costs for these activities are not included in the cost estimates. For Alternative 3, for comparison purposes, the current S&M costs are assumed to continue through the year 2095. Although institutional controls under Alternative 3 would likely be needed well beyond 2095, costs are only estimated over the next 90 years for the purposes of preparing the cost comparison. The year 2095 is used as the assumption for the period of continued S&M, since the timeframe is established in the comprehensive WAG RODs, which include industrial land use until at least 2095 and the potential for residential land use thereafter at some WAGs. Costs of future decommissioning under Alternative 3 are not included. However, if decommissioning and disposal is delayed to a future date, it can be safely assumed that costs from the estimates for Alternative 2 would be escalated to the future start date and could be added to the interim S&M costs estimated for this EE/CA.

The information in the cost estimate summary is based upon the best available information regarding the anticipated scope of the removal action alternatives. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design and performance of the removal action. Major changes will be documented in the form of a memorandum placed into the

Administrative Record file. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30% of actual project cost. The cost estimate summary is presented in Table ES-1.

Present-worth cost estimates for the three alternatives are shown in Table 2. The costs are based on present-day (2006) dollars. Consistent with guidance established by the EPA and the U.S. Office of Management and Budget, present-worth analysis is included as a basis for comparing costs of cleanup alternatives under the CERCLA program (OMB 1992).

Table 2. Present worth cost estimates for the three alternatives.

Alternative	TAN (Present- Worth)	RTC (Present- Worth)	INTEC (Present- Worth)	RWMC (Present- Worth)	Total Present-Worth Cost
Alternative 1 – No Action	\$0	\$0	\$0	\$0	\$0
Alternative 2 - Removal and Disposal of Buildings, Structures, and Building Contents	\$6,761,000	\$18,115,000	\$15,367,000	\$9,035,000	\$41,193,000
Alternative 3 – Continued Surveillance and Monitoring Followed by Future Decommissioning	\$53,723,000	\$9,595,000	\$53,477,000	\$27,165,000	\$143,959,000

6. RECOMMENDED REMOVAL ACTION ALTERNATIVE

The recommended removal action alternative is Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents). When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes would be addressed pursuant to requirements of those regulations. The scope of Alternative 2 is intended to encompass remaining miscellaneous decommissioning actions under the ICP. The scope would further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that will be subsequently addressed in future NTCRAAs. This EE/CA excludes the end-state decisions for these more substantial or significant facilities and decisions regarding reactor vessel disposition and activities already identified under existing Action Memoranda or remedial actions pursuant to the FFA/CO. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos and radioactively contaminated asbestos waste, and PCB-contaminated waste.

Wastes generated through implementation of Alternative 2 would be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For contaminated wastes generated during the decommissioning, the ICDF would be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of buildings and structures would include removal of abovegrade structures. Belowgrade structures would be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they would optionally be left in place, backfilled, and brought to grade. Backfill would consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of

contamination to surrounding soils is encountered, those soils exceeding the RAOs would be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE Idaho as a new site under the FFA/CO, with concurrence by the DEQ and EPA.

The recommended alternative meets the proposed RAOs regarding long-term risk, minimizes short-term worker risk and radiation exposure, is cost effective, and provides a safe and stable configuration that is environmentally sound. DOE Idaho also considers Alternative 2 consistent with the RAOs of the comprehensive WAG RODs and compliant with ARARs.

6.1 Compliance with Environmental Regulations, Including Those That Are Applicable or Relevant and Appropriate Requirements

Section 121 of CERCLA (42 USC § 9621) requires the responsible CERCLA implementing agency to ensure that the substantive standards of HWMA/RCRA and other applicable laws will be incorporated into the federal agency's design and operation of its long-term remedial actions and into its more immediate removal actions. DOE Idaho is the implementing agency for this NTCRA. Both DEQ and EPA concur that an NTCRA is warranted to protect human health and the environment. Through the NTCRA process, the risks presented in this document will be mitigated in a timely manner.

Table 3 lists the proposed ARARs that have been identified for this removal action. These ARARs are a compilation and expansion of the ARARs identified in the comprehensive WAG RODs. The ARARs list is based on several key assumptions:

- Any residual contamination left in place will meet the RAOs identified in Section 3.1.
- When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes would be addressed pursuant to requirements of those regulations.
- The majority of lead shielding will be removed from the buildings and structures subject to this EE/CA prior to initiation of the NTCRA through other regulatory activities intended to place the facilities in an environmentally safe condition. However, some lead may remain following these activities, which may require management under the scope of the NTCRA. Removed lead that constitutes hazardous waste and cannot be recycled or reclaimed shall be declared a hazardous waste or mixed low-level waste and will be disposed of at an off-Site disposal facility in accordance with the disposal facility WAC. Mercury located in mercury fluorescent lamps is planned for removal prior to this NTCRA under other regulatory activities intended to place the facility in an environmentally safe condition, as would the mercury-containing electrical switches and lights.
- Activities performed under the auspices of the VCO will be conducted outside the scope of the NTCRA.
- If decontamination liquids are generated, they will be disposed of at the ICDF evaporation ponds in accordance with the approved WAC.

- Debris generated during demolition of the buildings and structures may have paint that contains PCBs. PCB-containing light ballasts will be disposed of at an appropriate disposal facility. If encountered, such waste may trigger substantive requirements of the Toxic Substances Control Act (15 USC § 2601 et seq.). Lead-contaminated paint also may be removed, which would be subject to the requirements of RCRA hazardous waste regulations.
- Asbestos-containing material, which is both friable and nonfriable, would be encountered incidental to performance of the NTCRA. Friable or regulated asbestos-containing material is subject to specific asbestos regulations and would be acceptable for disposal at the ICDF and/or, if not radiologically contaminated, at the CFA Asbestos Landfill. Regulated asbestos will be removed and disposed of as required by 40 CFR 61.150, “Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations.”

6.2 Cultural Resources

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 USC § 470 et seq.), as amended, requires agencies to consider the impact of undertakings on properties listed or eligible for listing in the National Register of Historic Places and to consult with the Idaho State Historic Preservation Officer (SHPO) and other interested parties when impacts are likely. It also requires federal agencies to invite the Advisory Council on Historic Preservation (ACHP) to participate in consultation when impacts may be adverse. The NHPA Section 106 process has been tailored to meet the unique needs of the INL Site. Section 110 of the NHPA directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the National Register of Historic Places, including previously unidentified historic properties that may be discovered during the implementation of a project (36 CFR 800). In addition, the Archaeological Resources Protection Act of 1979 (16 USC § 470aa–470mm), as amended, provides for the protection and management of archaeological resources on federal lands. Procedures and strategies to tailor these requirements to the unique needs of the INL Site are described in the Cultural Resource Management Plan (CRMP) (DOE-ID 2004). The CRMP is implemented through a Programmatic Agreement among DOE Idaho, the Idaho SHPO, and the ACHP. Mitigation activities identified by the CRMP have been completed for the buildings and structures identified in Section 2.1.8.

DOE is required to review as guidance the most current U.S. Fish and Wildlife Service list for threatened and endangered plant and animal species. DOE Idaho determined that none of the alternatives would impact any threatened and endangered species and also determined that formal consultation with the U.S. Fish and Wildlife Service is not required for this action.

6.3 Compliance with Disposal Facility Waste Acceptance Criteria

Wastes generated through implementation of Alternative 2 would be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For uncontaminated solid wastes, the TAN Industrial Waste Landfill would be used for disposal of such wastes generated near TAN, and the CFA Industrial Waste Landfill would be utilized for those wastes generated elsewhere at the INL Site. For contaminated wastes generated during the decommissioning, the ICDF would be the preferred disposal location for wastes meeting the ICDF WAC.

Table 3. Summary of applicable or relevant and appropriate requirements for the general decommissioning non-time critical removal action.

Requirement (Citation)	ARAR Type	Comments
Clean Air Act and Idaho Air Regulations		
“Toxic Substances,” IDAPA 58.01.01.161	A	Applies to any toxic substances emitting during implementation of the removal action.
<10 mrem/yr, 40 CFR 61.92, “Standard”	A	Applies to the waste-handling activities.
“Emission Monitoring and Test Procedures,” 40 CFR 61.93	A	Applies to the waste-handling activities.
“Compliance and Reporting,” 40 CFR 61.94(a)	A	Applies to the waste-handling activities.
“Standard for Demolition and Renovation,” 40 CFR 61.145	A	Applies to any asbestos-containing materials removed during the decommissioning.
“Rules for Control of Fugitive Dust,” and “General Rules,” IDAPA 58.01.01.650 and .651	A	Applies to the waste-handling activities.
Idaho Solid Waste Facilities Act		
“Applicable Requirements for Tier II Facilities,” IDAPA 58.01.06.012	A	Applies to disposal of solid wastes at the TAN and CFA Landfills.
RCRA and Idaho Hazardous Waste Management Act		
<i>Generator Standards:</i>		
“Standards Applicable to Generators of Hazardous Waste,” IDAPA 58.01.05.006, and the following, as cited in it:		
“Hazardous Waste Determination,” 40 CFR 262.11	A	Applies to waste that would be generated during the removal action.
<i>General Facility Standards:</i>		
IDAPA 58.01.05.008, “Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities,” and the following, as cited in it:		
“Temporary Units (TU),” 40 CFR 264.553	A	Waste may be treated or temporarily stored in a temporary unit prior to disposal.
“Staging Piles,” 40 CFR 264.554	A	Waste may be temporarily staged prior to disposal.
“General Inspections Requirements,” 40 CFR 264.15	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
“Preparedness and Prevention,” 40 CFR 264, Subpart C	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.

Table 3. (continued).

Requirement (Citation)	ARAR Type	Comments
“Contingency Plan and Emergency Procedures,” 40 CFR 264, Subpart D	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
“Disposal or Decontamination of Equipment, Structures, and Soils,” 40 CFR 264.114	A	Applies to contaminated equipment used to remove, treat, or transport hazardous waste.
“Use and Management of Containers,” 40 CFR 264.171-178	A	Applies to containers used during the removal and treatment of hazardous waste.
<i>Land Disposal Restrictions:</i>		
IDAPA 58.01.05.011, “Land Disposal Restrictions,” and the following, as cited in it:		
“Applicability of Treatment Standards,” 40 CFR 268.40(a)(b)(e)	A	Applies to hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Treatment Standards for Hazardous Debris,” 40 CFR 268.45	A	Applies to hazardous debris, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Universal Treatment Standards,” 40 CFR 268.48(a)	A	Applies to nondebris hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Alternative LDR Treatment Standards for Contaminated Soil,” 40 CFR 268.49	A	Applies to contaminated soil, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
IDAPA 58.01.05.016, “Standards for Universal Waste Management”		
“Standards for Large Quantity Handlers of Universal Waste,” 40 CFR 273 Subpart C	A	Applies to management of universal wastes.
Idaho Groundwater Quality Rules		
“Ground Water Quality Rule,” IDAPA 58.01.011	A	The waste-handling activities must prevent migration of contaminants from the reactor complex that would cause the SRPA groundwater to exceed applicable State of Idaho groundwater quality standards in 2095 and beyond.
TSCA		
“Decontamination Standards and Procedures: Decontamination Standards,” 40 CFR 761.79(b)(1)	A	Applicable to decontamination of equipment with PCB contamination, if PCB waste is generated.

Table 3. (continued).

Requirement (Citation)	ARAR Type	Comments
“Decontamination Standards and Procedures: Self-Implementing Decontamination Procedures,” 40 CFR 761.79(c)(1) and (2)	A	Applicable to decontamination of equipment with PCB contamination, if PCB waste is generated.
“Decontamination Standards and Procedures: Decontamination Solvents,” 40 CFR 761.79(d)	A	Applicable to decontamination of equipment used to manage PCB-contaminated waste, if PCB waste is generated.
“Decontamination Standards and Procedures: Limitation of Exposure and Control of Releases,” 40 CFR 761.79(e)	A	Applicable to decontamination activities of equipment with PCB-contaminated waste, if decontamination is performed.
“Decontamination Standards and Procedures: Decontamination Waste and Residues,” 40 CFR 761.79(g)	A	Applicable to management of decontaminated waste and residuals from PCB-contaminated equipment, if PCB waste is generated.
To-Be-Considered Requirements		
“Radiation Protection of the Public and the Environment,” DOE Order 5400.5, Chapter II(1)(a,b)	TBC	Applies to the decommissioning before, during, and after the removal action. Substantive design and construction requirements would be met to keep public exposures as low as reasonably achievable.
“Radioactive Waste Management,” DOE Order 435.1	TBC	Applies to the general decommissioning before, during, and after the removal action. Substantive design and construction requirements would be met to protect workers.
<i>Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities (EPA 2006)</i>	TBC	Applies to residual waste following completion of the removal action.
<p>A = applicable requirement; R = relevant and appropriate requirement; TBC = to be considered</p> <p>ARAR = applicable or relevant and appropriate requirement.</p> <p>CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act.</p> <p>CFR = Code of Federal Regulations.</p> <p>DOE = Department of Energy.</p> <p>EPA = Environmental Protection Agency.</p> <p>ETR = Engineering Test Reactor.</p> <p>ICDF = Idaho CERCLA Disposal Facility.</p> <p>IDAPA = Idaho Administrative Procedures Act.</p> <p>PCB = polychlorinated biphenyl.</p> <p>RCRA = Resource Conservation and Recovery Act.</p> <p>SRPA = Snake River Plain Aquifer.</p> <p>TSCA = Toxic Substances Control Act.</p> <p>WAC = waste acceptance criteria.</p>		

The ICDF is a state-of-the art disposal facility designed and constructed with leachate collection and leak detection systems, with two 60-mil high-density polyethylene liners, and a 3-ft-thick clay bottom liner. The ICDF is an on-Site disposal facility that accepts CERCLA waste generated at the INL Site. Hazardous, mixed, low-level, asbestos, and Toxic Substances Control Act waste can be accepted for disposal at the ICDF (DOE-ID 2005). Although the decommissioning to be performed under this NTCRA is not expected to generate any waste packages exceeding the Class C criteria established for wastes regulated by the Nuclear Regulatory Commission, if a waste package with activated metals did exceed the Class C criteria, a special performance assessment must be performed and reviewed by the regulatory agencies to ensure that there are no unacceptable risks associated with disposal at the ICDF.

6.4 Achieving Removal Action Goals

The recommended Alternative 2 would meet the RAOs through removal and shipment of contaminated wastes and debris to an approved disposal facility. Demolition of buildings and structures would include removal of abovegrade structures. Belowgrade structures would be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they would optionally be left in place, backfilled, and brought to grade. Backfill would consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs would be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE Idaho as a new site under the FFA/CO, with concurrence by DEQ and EPA. These actions would be consistent with the RAOs identified in Section 3.1 and with the RAOs established in the comprehensive WAG RODs for the areas where the decommissioning actions addressed by this EE/CA are expected to occur.

7. REFERENCES

- 36 CFR 800, 2004, "Protection of Historic Properties," *Code of Federal Regulations*, Office of the Federal Register, August 2004.
- 40 CFR 61.92, 2006, "Standard," *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 61.93, 2006, "Emission Monitoring and Test Procedures," *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 61.94, 2006, "Compliance and Reporting," *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 61.145, 2006, "Standard for Demolition and Renovation," *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 61.150, 2006, "Standard for waste disposal for manufacturing, fabricating, demolition, renovation, and spraying operations," *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 262.11, 2006, "Hazardous Waste Determination," *Code of Federal Regulations*, Office of the Federal Register, July 2006.

- 40 CFR 264.15, 2006, “General Inspection Requirements,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.114, 2006, “Disposal or Decontamination of Equipment, Structures and Soils,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.171, 2006, “Condition of Containers,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.172, 2006, “Compatibility of Waste with Containers,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.173, 2006, “Management of Containers,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.174, 2006, “Inspections,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.175, 2006, “Containment,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.176, 2006, “Special Requirements for Ignitable or Reactive Waste,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.177, 2006, “Special Requirements for Incompatible Wastes,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.178, 2006, “Closure,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.553, 2006, “Temporary Units (TU),” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264.554, 2006, “Staging Piles,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264, Subpart C, 2006, “Preparedness and Prevention,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 264, Subpart D, 2006, “Contingency Plan and Emergency Procedures,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 268.40, 2006, “Applicability of Treatment Standards,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 268.45, 2006, “Treatment Standards for Hazardous Debris,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 268.48, 2006, “Universal Treatment Standards,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.

- 40 CFR 268.49, 2006, “Alternative LDR Treatment Standards for Contaminated Soil,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 273, Subpart C, 2006, “Standards for Large Quantity Handlers of Universal Waste,” *Code of Federal Regulations*, Office of the Federal Register, July 2006.
- 40 CFR 300, 2006, “National Oil and Hazardous Substances Pollution Contingency Plan,” *Code of Federal Regulations*, Office of the Federal Register, August 2006.
- 40 CFR 300.415, 2006, “Removal Action,” *Code of Federal Regulations*, Office of the Federal Register, August 2006.
- 40 CFR 761.79, 2006, “Decontamination Standards and Procedures,” *Code of Federal Regulations*, Office of the Federal Register, June 2006.
- 15 USC § 2601 et seq., 1976, “The Toxic Substances Control Act (TSCA) of 1976,” *United States Code*.
- 16 USC § 470 et seq., 1966, “National Historic Preservation Act,” *United States Code*, October 15, 1966.
- 16 USC § 470aa–470mm, 2002, “Archaeological Resources Protection Act,” *United States Code*, January 22, 2002.
- 42 USC § 9601 et seq., 1980, “Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund),” *United States Code*, December 11, 1980.
- 42 USC § 9621, 1998, “Cleanup Standards,” *United States Code*, January 26, 1998.
- DEQ, 2000, B. R. Monson, DEQ, to D. N. Rasch, DOE-ID, Enclosure: “Consent Order,” Idaho Code § 39-4413, June 14, 2000.
- DOE O 435.1, 2001, “Radioactive Waste Management,” Change 1, U.S. Department of Energy, August 28, 2001.
- DOE O 5400.5, 1993, “Radiation Protection of the Public and the Environment,” Change 2, U.S. Department of Energy, January 7, 1993.
- DOE and EPA, 1995, *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, KLF-211-95, Rev. 0, U.S. Department of Energy, Washington, D.C., and U.S. Environmental Protection Agency, Washington, D.C., May 22, 1995.
- DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, Administrative Docket No. 1088-06-120, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare, December 9, 1991.
- DOE-ID, 1997, *Final Record of Decision Test Reactor Area Operable Unit 2-13, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho*, DOE/ID-10586, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, December 1997.

- DOE-ID, 1999a, *Final Record of Decision for Test Area North Operable Unit 1-10 Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho*, DOE/ID-10682, Rev. 0, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, October 1999.
- DOE-ID, 1999b, *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho*, DOE/ID-10660, Rev. 0, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, October 1999.
- DOE-ID, 2000a, *Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13*, DOE/ID-10744, Rev. 0, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, May 2000.
- DOE-ID, 2000b, *Final Comprehensive Record of Decision for Central Facilities Area, Operable Unit 4-13*, DOE/ID-10719, Rev. 2, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, July 2000.
- DOE-ID, 2000c, *Record of Decision Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho*, DOE/ID-10700, U.S. Environmental Protection Agency, Idaho Department of Environmental Quality, U.S. Department of Energy Idaho Operations Office, January 2000.
- DOE-ID, 2004, *Idaho National Engineering and Environmental Laboratory Cultural Resource Management Plan*, DOE/ID-10997, Rev. 0, U.S. Department of Energy Idaho Operations Office, August 2004.
- DOE-ID, 2005, *ICDF Complex Waste Acceptance Criteria*, DOE/ID-10881, Rev. 2, U.S. Department of Energy Idaho Operations Office, July 2005.
- DOE-NE-ID, 2005, *Action Memorandum for Phase 1 of the Decommissioning of the Power Burst Facility Reactor Building (PER-620)*, DOE/NE-ID-11213, Rev. 0, U.S. Department of Energy Idaho Operations Office, February 2005.
- EPA, 1993, *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA*, EPA/540-R-93-057, U.S. Environmental Protection Agency, August 1993.
- EPA, 2000, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, EPA/540-R-00-002, U.S. Environmental Protection Agency, July 2000.
- EPA, 2006, *Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities*, U.S. Environmental Protection Agency, May 2006.
- IDAPA 58.01.01.161, 1995, "Toxic Substances," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, June 30, 1995.
- IDAPA 58.01.01.650, 1994, "Rules for Control of Fugitive Dust," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, May 1, 1994.

- IDAPA 58.01.01.651, 1994, “General Rules,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, May 1, 1994.
- IDAPA 58.01.05.006, 2006, “Standards Applicable to Generators of Hazardous Waste,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 11, 2006.
- IDAPA 58.01.05.008, 2006, “Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 11, 2006.
- IDAPA 58.01.05.011, 2006, “Land Disposal Restrictions,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 11, 2006.
- IDAPA 58.01.05.016, 2006, “Standards for Universal Waste Management,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 11, 2006.
- IDAPA 58.01.06.012, 2003, “Applicable Requirements for Tier II Facilities,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 3, 2003
- IDAPA 58.01.011, 1997, “Ground Water Quality Rule,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, March 20, 1997.
- Litus, M. and J. P. Shea , 2005, *Summary of Cleanup at the Idaho National Laboratory Site, Idaho Completion Project, Idaho Falls, ID*, ICP/EXT-05-00806, Rev. 0, Idaho Completion Project, Idaho National Laboratory, March 2005.
- OMB, 1992, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, Circular No. A-94, Office of Management and Budget, Washington, D.C.
- Public Law 99-499, 1986, “Superfund Amendments and Reauthorization Act of 1986 (SARA),” 100 Statutes 1728, *Public Law*, October 17, 1986.